

**CONRAC**  
**CORPORATION**

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**CONRAC**  
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C	O	N	R	A	C
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# CONRAC CORPORATION

## AVIONIC SYSTEMS

Air Data Computers  
Stall Warning & Speed Command  
Pitch-Trim Compensators  
Flight Data Recording  
Energy Management  
Data Telemetry  
Missile Control  
Gyro Systems  
Nucleonic Gaging  
Militarized TV Monitors

## MACHINE TOOLS

Datex Numerical Controls  
Tube Benders, N/C & Manual  
Wire Processing Systems  
N/C Fastening Systems  
N/C Honeycomb Milling Machines  
N/C Filament Laying Machines  
Presstaker Pressing and Staking Machines  
Component Assembly Systems  
Beam Welders  
Flaring Machines  
Flanging Machines

## AVIONIC INSTRUMENTS

Pressure Transducers  
Accelerometers  
Pressure & Acceleration Switches  
Angle of Attack and Yaw Sensors  
Gyros, Rate and Free  
Shaft Position Encoders  
Analog-Digital-Synchro Converters

## INDUSTRIAL SYSTEMS

On-Line Process Controls:  
Paper Opacity, Caliper & Consistency  
Plastic & Rubber Thickness Gaging  
Liquid Level Controls  
Datex Business Data Collection  
Alston Telephone Test Equipment  
Datex Air/Water Monitoring  
Ultrasonic Cleaning Systems  
Datex Digital Telemetry & Supervisory Systems  
Datex Scientific Instrument Controls

## INDUSTRIAL INSTRUMENTS

Cramer Timing & Instrument Motors  
Turner Microphones  
Ultrasonic Cleaning Equipment  
Datex Shaft Position Encoders  
Cramer Timing Devices  
Conrac CRT Displays  
Alston Telephone Test Monitors  
Cramer Counters  
Process Control Thickness Gages  
Datex Scientific Analytical Instruments

## DISPLAYS

Conrac Television Monitors:  
Professional  
Closed-Circuit  
Educational  
Alphanumeric Displays  
Digital Data Displays  
Fluidic Controlled Readouts  
Electromechanical Displays

# AV12E TELEVISION RECEIVER



AV12E

Designed for off-air monitoring, video recording or rebroadcast applications, the AV12E is a professional quality television audio-video receiver.

It supplies composite video and separate audio from modulated RF signals and is designed to accept two types of interchangeable plug-in units.

CRYSTAL CONTROLLED OPERATION is possible by insertion of the type MCU single channel plug-in unit. The antenna input network contains a bandpass filter which can be adjusted to match any given set of antenna and signal strength conditions while providing a VSWR of better than 1.2 to one.

Employing a frame grid cascode RF amplifier, a crystal controlled local oscillator, a frequency multiplier chain, and pentode mixer, the MCU provides optimum performance on any given VHF channel.

MULTI-CHANNEL OPERATION is possible by insertion of the SU-213, 12-channel plug-in turret type tuner utilizing individual VHF channel strips.

VIDEO OUTPUT is held within  $\pm 1$  db to 4.1 MHz. Bifilar-T traps are employed to reduce phase distortion.

OVER 60 DB OF SOUND ATTENUATION in the video channel is possible through a combination "split-off sound" and "inter-carrier sound" circuitry. At the same time, the 4.5 MHz sound converter operates at an optimum ratio of sound carrier to picture carrier level. Both a fast time-constant limiter and a ratio detector are employed.

VIDEO OUTPUT of up to 1.5 volts p-p into a 75 ohm load with extremely low distortion is possible through utilization of a totem pole amplifier.

4.5 MEGAHERTZ SOUND REINSERTION is available at no extra charge if this operation is specified at the time the receiver is ordered. 75 ohm input is standard unless a 300 ohm input is specified.

Technical data, tube complement and mechanical specifications are given on the next page.

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COVINA, CALIFORNIA



# Specifications

## Technical Data

**INPUT POWER:** 120 watts at 120/240 volts AC, 50/60 Hz. 6-foot cord.

**RF:** VHF 2-13, 75 ohms unbalanced. Can be supplied for 300 ohm balanced input if specified at time of ordering.

**VIDEO OUTPUT:** Sync negative. Nominally 1.4 volts p-p. Adjustable. Additional connector available for local monitoring. SO239 type connectors.

**AUDIO OUTPUT:** Zero dbm, 600 ohms balanced. Peerless output transformer, screw terminals. The unit is shipped with the multi-tap audio output transformer connected to feed standard 600 ohm balanced lines. Can be reconnected for other commonly used impedances.

## Controls, Connectors, Adjustments

**FRONT PANEL:** Video level, audio level, RF gain, AGC selector and power switch, (channel selector and fine tuning on SU-213), AGC delay, detector level.

**REAR APRON:** Antenna input, fuse, detector level, video output, audio output.

## Tube Complement

6BZ6	(3 each) IF Amplifiers	6BY6	Sync Separator	6CG8	Mixer
6CB6	IF Amplifier	6AL5	AGC Clamp and Bias Rectifier	6CG8	Crystal Oscillator and Frequency Multiplier
6AQ5	1st Video Amplifier	6AU6	AGC Keyer	6BN4	2nd Frequency Multiplier (Channels 7-13 only)
6DJ8	2nd Video Amplifier	6AQ5	Keying Pulse Amplifier	SU-213	
5687	3rd Video Amplifier	OA2	Voltage Regulator	6HA5	RF Amplifier
6AN8	1st Sound IF Amplifier	1N1764	(2 each) Low Voltage Rectifiers	6GJ7	Mixer
6AU6	2nd Sound IF Amplifier	1N60	Video Detector		
6AL5	Sound Detector	MCU CONVERTER			
6DJ8	Push-Pull Audio Output	ECC88	Cascode RF Amplifier		

## Mechanical Specifications

Furnished in rack hanger for mounting in standard 19" rack, 7" high, 12-1/16" deep, measured from the mounting face of the rack.

Available on slides at additional cost. Specify depth of rack.

Net Weight: 28 lbs.

Shipping Weight: 42 lbs.

## Construction

Finished in deep umber gray, baked enamel.



# CONRAC®

COVINA, CALIFORNIA

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# CEA25

## 25-INCH DISPLAY MONITOR



CEA25/C

Featuring both high and low voltage regulation, the CEA25 is a 25" industrial display monitor designed to give professional quality pictures in high ambient light areas.

The CEA25—created to fill a specific requirement for high contrast, stable pictures under varying line voltage conditions while operating from industrial-type synchronizing pulses—combines the following unique features:

A SEPARATE SYNC CHANNEL with an independent gain control assures positive interlace and stability regardless of the setting of the contrast control.

A RECTANGULAR, BONDED AND ETCHED SAFETY SHIELD on the picture tube minimizes specular reflections, increases the viewing angle over that possible on conventional industrial monitors and permits the most convenient picture tube cleaning possible.

VIDEO RESPONSE IS FLAT TO 10 MEGAHERTZ, assuring center resolution of 800

lines and corner resolution of 600 lines. Differential gain is below 5% with 50 volts driving the kinescope for excellent gray scale characteristics.

A LOCKING TRAPDOOR prevents tampering with operating controls, adjustments and fuses at unattended locations.

A DIFFERENTIAL INPUT is provided to minimize hum and other direct pick-up on long video cables. The monitor is conveniently changed between conventional grounded 75 ohm input and differential input operation by removing a single screw located on the rear apron adjacent to the input connectors.

Designed to display large, professional quality pictures in public areas where cabinet styling is important, the CEA25 utilizes a shorter 110-degree tube. Dynamic focus and increased ultor voltage assure outstanding performance on this compact large-screen monitor.

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COVINA, CALIFORNIA



# Specifications

## Technical Data

INPUT POWER:	190 watts at 120/240 volts 60 Hz (525/60 U.S.) or 50 Hz (625/50 CCIR). All performance specifications will be met while line voltage varies from 105 to 130 volts AC at any rate.
VIDEO SIGNAL:	0.25 volt, p-p (minimum for 50 volts at kinescope). 4.0 volts maximum. Sync negative at monitor input.
VIDEO INPUT IMPEDANCE:	High impedance bridging (equivalent to 470K in parallel with 15 pF) can be terminated by an internal 75 ohm load through a switch located on rear apron.
VIDEO RESPONSE:	10 MHz $\pm$ 1 db (800 line resolution). Differential gain below 5% with 50 volt kinescope drive.
LINEARITY:	Within 2% of picture height.

## Controls, Connectors, Adjustments

FRONT PANEL:	Focus, width, brightness, horizontal linearity, horizontal hold, vertical hold, bottom linearity, top linearity, vertical size, sync, contrast, on-off switch, AC line fuse.
REAR APRON:	Paralleled video input connectors, video terminating switch, paralleled sync input connectors.
CHASSIS DECK:	DC restorer switch, external-internal switch, horizontal drive, horizontal frequency, B+ adjust, ultor adjust.
CONNECTORS:	All video and sync connectors are SO239 type.

## Tube Complement

6DJ8	1st Video—Sync Amplifier	6CG7	Vertical Oscillator—Discharge	6BK4	High Voltage Regulator
6CB6	2nd Video Amplifier	6BX7	Vertical Output	1B3GT	High Voltage Rectifier
12BY7	3rd Video Amplifier	6CG7	Horizontal Oscillator—Discharge	1N3255	(4 each) Low Voltage Rectifiers
6AL5	DC Restorer—Sync Clipper	6JB6	Horizontal Output	1N3254	Beam Clamp
12AU7	Sync—Amplifier—Phase Splitter	6DW4	Horizontal Damper	25KP4	Kinescope, frosted finish with laminated safety glass
12AU7	2nd Sync Amplifier—Sync Limiter	6080	Voltage Regulator		
6AL5	Horizontal Phase Detector	5651A	Voltage Reference		
12AX7	Vertical Integrator	6AU6	Voltage Control		

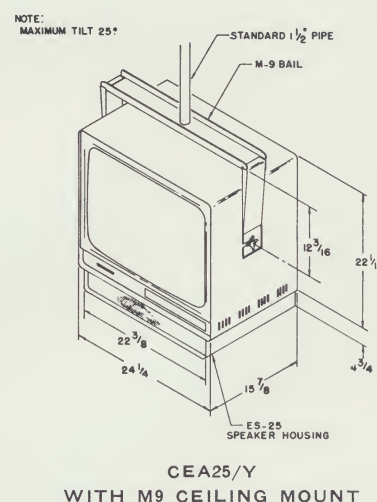
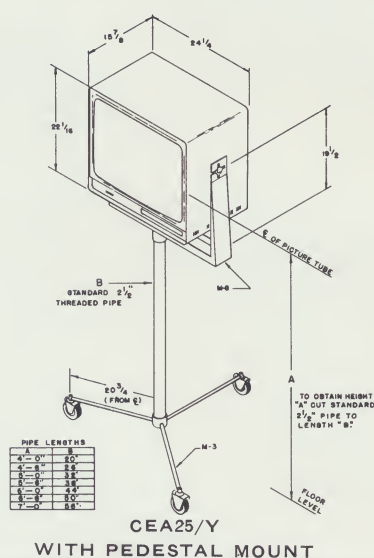
## Mechanical Specifications

	Width	Height	Depth	Net Weight	Shipping Weight
CEA25/C	24 1/4"	22 1/16"	15 7/8"	104#	117#
CEA25/Y	27 1/4" (In-cluding mounting studs)	22 1/16"	15 7/8"	104#	117#
M9	Ceiling Mount			10#	16#
M8	Pedestal Mount			18#	25#
M3	Three-Wheel Dolly			25#	27#
ES25	3.2 ohm, 7.5 watt, 3 x 14 speaker			14#	20#

## Construction

Metal Cabinet—18 gauge steel chassis—hand wired for ease of maintenance. Copper banded transformer—first quality resistors and capacitors throughout. 3-wire AC cord 6' long.

Finish—light gray, baked enamel.



# CONRAC®

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Conrac's CKD and CLD 14-inch monitors are designed to give continuous duty operation with a minimum of maintenance in broadcast studio, industrial and computer-generated-signal applications. Their high and low voltage regulation assures extremely stabilized pictures — size and brightness will not change as the AC line voltage varies from 105 to 130 volts or 210 to 260 volts.

Model CKD14, one of the most useful general purpose monitors designed by Conrac, is supplied in a portable cabinet. Model CLD14, a rack-mount unit taking up only 10½ inches of rack space, provides the ideal screen size for console viewing.

Video response is flat to 10 MHz, assuring center resolution of 800 lines. Differential gain is below 5% at 50 volts drive to the kinescope, for excellent gray scale characteristics. Linearity, both horizontal and vertical, is within 2% of picture height. A 70-degree tube is used to assure accurate picture geometry and excellent corner focus.

Taps are provided on the horizontal output transformer so the monitors may be operated at "reduced scan," completely showing all four corners. Although the monitors are connected at the factory for "full scan" operation, the change may be made easily in the field.

Loop-through operation is provided by parallel receptacles in both the video and external sync circuits, and a switch permits selection of either composite video or separate video and composite sync. The video input is provided with a terminating resistor and switch.

A switch is provided to permit selection of either 100% or zero DC restoration.

# 14-INCH CABINET AND RACK-MOUNT MONITORS

Model CKD14 and CLD14



CKD14



CLD14

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# Specifications

## TECHNICAL DATA

**Input power:** 180 watts at 120/240 volts, 60 Hz (525/60 U.S.) or 50 Hz (625/50 CCIR). Three-wire AC cord, six-feet long. All performance specifications will be met while line voltage varies from 105 to 130 volts or 210 to 260 volts AC.

**Video signal:** 0.25 volt p-p (minimum for 50 volts at kinescope). Sync negative at monitor input.

**Video input impedance:** High impedance bridging (equivalent to 470K in parallel with 15 pF) can be terminated by an internal 75 ohm load through a switch located on rear apron.

**Video response:** 10 MHz  $\pm$  1 db (800 line resolution). Differential gain below 5% with 50 volt kinescope drive.

**Linearity:** Within 2% of picture height.

**Kinescope:** 14BAP4 14-inch kinescope.

## CONSTRUCTION

Racks and cabinets are constructed of heavy gauge steel, finished in deep umber gray. All CKD14 and CLD14 units are shipped with kinescope in place. They have removable front panel for ease in cleaning the picture tube and safety glass. Front controls are easily accessible from recessed panel with hinged cover. Circularly polarized laminated safety glass is available at extra cost, as well as cemented faceplate kinescope. The latter eliminates the need for safety glass in front of the tube.

## CONTROLS, CONNECTORS, ADJUSTMENTS

### Front panel:

Off-on switch	Focus	Horizontal hold
Vertical hold	Height	Vertical linearity
Contrast	Brightness	

### Rear apron:

Paralleled video input connectors	Video terminating switch
DC restorer switch	External-internal sync switch
Paralleled sync input connectors	AC line fuse
Horizontal output fuse	Ultor voltage adjust control
275 voltage adjust control	
AC outlet (wired through on-off switch—capacity 2 amps)	

### Chassis deck:

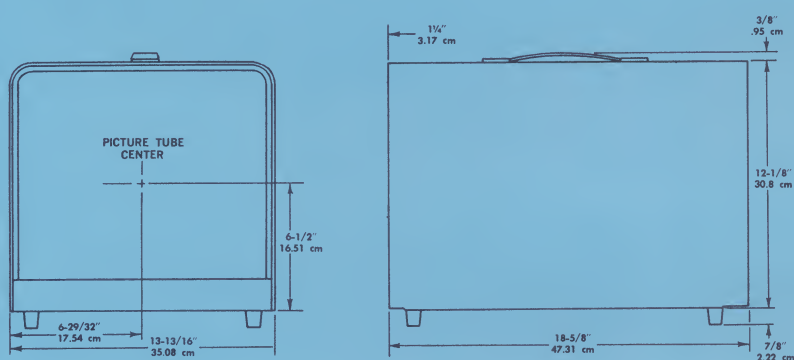
Vertical feedback	
Horizontal frequency	Horizontal drive
Horizontal width	Horizontal linearity

**Connectors:** All video and sync connectors are S0239 type.

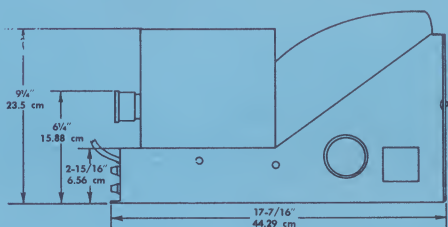
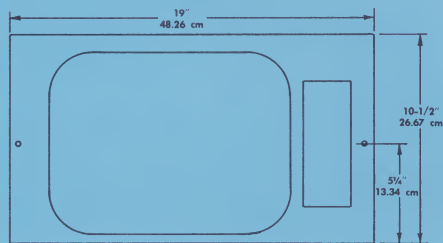
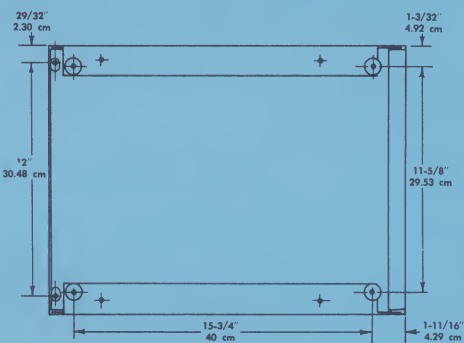
## MECHANICAL

### Model

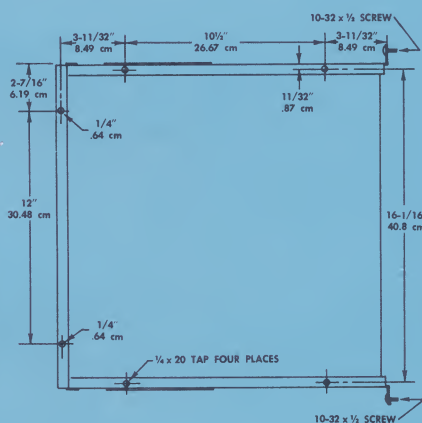
	Net Weight	Shipping Weight
Cabinet	62 lbs.	71 lbs.
CKD14	28.1 kilos	32.2 kilos
Rack-Mount	58 lbs.	73 lbs.
CLD14	26.3 kilos	33.1 kilos



CKD14



CLD14



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Conrac's CNB series 8-inch television monitors are full scale, broadcast quality units designed for continuous duty operation in broadcast, industrial and computer-generated-signal applications.

The CNB8's are available in a number of configurations: the portable carrying case, with handle; a dual rack-mount which presents two monitors side-by-side in a standard 19-inch relay rack, taking up only 10½ inches of vertical rack space; single units, mounted in 19-inch rack hangars, with a variety of front panels, permitting installation of other equipment.

Video response on the CNB8 series monitors is flat to 10 MHz, allowing resolution in excess of 700 lines on standard tubes. Differential gain is below 5% at 50 volts drive to the kinescope, providing excellent gray scale characteristics. The 90-degree deflection circuits produce both horizontal and vertical linearity within 2% of picture height.

Taps are provided on the horizontal output transformer so the units may be operated at "reduced scan," completely showing all four corners and sides. Although the monitors are connected at the factory for "full scan" operation, the change can be made easily in the field.

Horizontal oscillator circuits are designed to fully meet all requirements for video tape recording playback.

A switch is provided to permit selection of either 100% or zero DC restoration.

# 8-INCH TELEVISION MONITORS

## CNB8 Series



CNB8/C



CNB8/2R

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# Specifications

## TECHNICAL DATA

**Input power:** 130 watts at 120/240 volts, 60 Hz (525/60 U.S.) or 50 Hz (625/50 CCIR). Three-wire AC line cord, six-feet long, furnished.

**Video signal:** Composite 0.25 volts p-p (minimum for 50 volts at kinescope). Two volts maximum. Sync negative at monitor input. Parallel co-ax input connectors for multiple operation and a line terminating switch and resistor are provided.

**Video response:** Flat to 10 MHz  $\pm$  1 db. Standard kinescope resolution in excess of 700 lines. Differential gain below 5% at 50 volts kinescope drive.

**External sync:** High impedance, 3 - 8 volts p-p, sync negative. Parallel input connectors.

**Linearity:** Within 2% of picture height.

**Kinescope:** 8KP4 8-inch kinescope.

## CONTROLS, CONNECTORS, ADJUSTMENTS

### Front panel:

Off-on switch	Horizontal hold	Vertical hold
Height	Vertical linearity	Contrast
Brightness	Width	

### Rear apron:

Sync selector switch	Video line termination switch
DC restorer switch	Horizontal linearity
Horizontal drive	Focus
Fuses	

**Chassis deck:** Vertical feedback

**Connectors:** All video and sync connectors are S0239 type.

## CONSTRUCTION

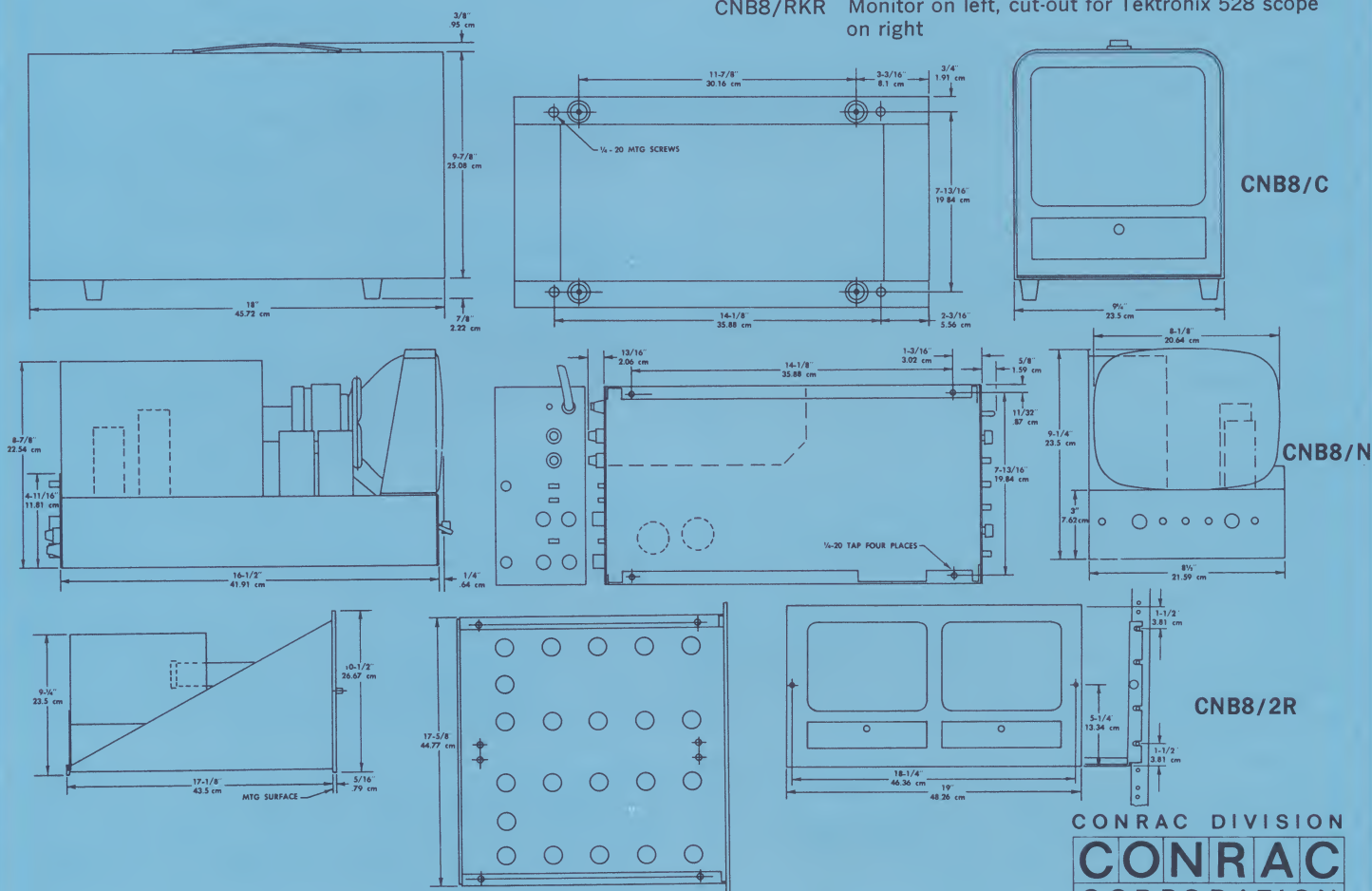
Racks and cabinets are constructed of heavy gauge steel, finished in deep umber gray. Cabinets are complete with metal back and carrying handle. All CNB8 models are shipped with kinescope in place. Cabinet and rack-mount models have removable front panel for ease in cleaning the picture tube face and safety glass. Front controls are easily accessible from recessed panel with hinged cover. Circularly polarized laminated safety glass is available at extra cost.

## MECHANICAL

Model	Net Weight	Shipping Weight
Chassis CNB8/N	27 lbs. 12.3 kilos	35 lbs. 15.9 kilos
Portable Cabinet CNB8/C	39 lbs. 17.7 kilos	45 lbs. 20.4 kilos
Rack Mount CNB8/2R	70 lbs. 31.8 kilos	87 lbs. 39.4 kilos
Rack Mount CNB8/R (XL, XR, KR, KL BR, BL, C)	42 lbs. 19.1 kilos	58 lbs. 26.3 kilos

## OPTIONAL MOUNTING CONFIGURATIONS

CNB8/RBL Monitor on right, blank panel on left  
 CNB8/RBR Monitor on left, blank panel on right  
 CNB8/RC Monitor centered  
 CNB8/RXL Monitor on right, cut-out for Tektronix 529 scope on left  
 CNB8/RXR Monitor on left, cut-out for Tektronix 529 scope on right  
 CNB8/RKL Monitor on right, cut-out for Tektronix 528 scope on left  
 CNB8/RKR Monitor on left, cut-out for Tektronix 528 scope on right



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600 No. Rimsdale Ave., Covina, Calif. 91722 / (213) 966-3511

The Conrac KNB Series 9-inch display monitor is designed for continuous duty operation and is fully compatible with EIA and industrial 525-line television standards, or computer-generated signals. The inherent ruggedness of its all solid state design, together with its economy and compact modern styling makes the KNB9 ideally suited for both industrial and educational applications.

Clear crisp pictures are assured by video response (less than 3 db down at 8 MHz) with a minimum of 30 volts drive to the kinescope. Viewable resolution is in excess of 600 lines in the screen center, with at least 400 lines in all corners. A diode DC restorer is continuously active—when high contrast pictures are desired, black signals (sync first) are clipped as the contrast control is advanced.

Simplified operation is provided by high stability solid state circuits. Contrast and brightness are the only controls required on the front panel, the on-off switch being ganged with the brightness control. "Set and forget" vertical and horizontal hold controls are easily accessible through a sliding front panel. Horizontal oscillator circuits are optimized to meet fully the requirements of industrial tape recorders.

High quality design and construction practices are used throughout, including a glass-epoxy circuit board with quick disconnects, regulated low voltage supply and video looping provisions with built-in termination switch. The picture tube incorporates implosion protection, while a bonded, etched safety panel to reduce reflections is available as an option.

PRINTED IN U.S.A.

## CONRAC II LINE SOLID STATE MONITORS KNB9 Series



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# Specifications

## TECHNICAL DATA

**Input Power:** 120 volts, 60 Hz, 30 watts. All performance specifications are met while line voltage varies from 105 to 130 volts AC. Three-wire line cord, 6-feet long, with safety interlock, provided.

**Video Signal:** 0.35 volts p-p for 35 volts at kinescope. Sync negative at monitor input.

**Video Impedance:** Bridging (equivalent to 38K ohms in parallel with 20 pF) which may be terminated by an internal 75 ohm load by a switch located on the rear apron.

**Video Response:** -3 db at 8 MHz. Differential gain less than 5% at nominal 30 volt kinescope drive.

**Pulse Rise Time:** 20 volt rise in less than 100 nanoseconds.

**DC Restoration:** Diode clamp.

**Resolution:** 600 lines

**Linearity:** Within 3% of picture height.

## AMBIENT OPERATING TEMPERATURE

Chassis Only KNB9/N	45°C Maximum
Cabinet Enclosure KNB9/C	35°C Maximum
Dual Rack Mount KNB9/2R	45°C Maximum

## MECHANICAL

	Length	Width	Height	Net Weight	Shipping Weight
Cabinet Enclosure KNB9/C	9 $\frac{1}{4}$ "	9-7/16"	9-1/16"	12.7 lbs.	15.7 lbs.
Chassis Only KNB9/N	8-3/8"	8-5/16"	8-3/16"	9.5 lbs.	12.5 lbs.
Dual Rack Mount KNB9/2R	8-15/16"*	19"	8 $\frac{3}{4}$ "	29.0 lbs.	32.4 lbs.

Dimensions do not include feet, handles or knobs. \* From mounting surface, add 5/16" for overall length.

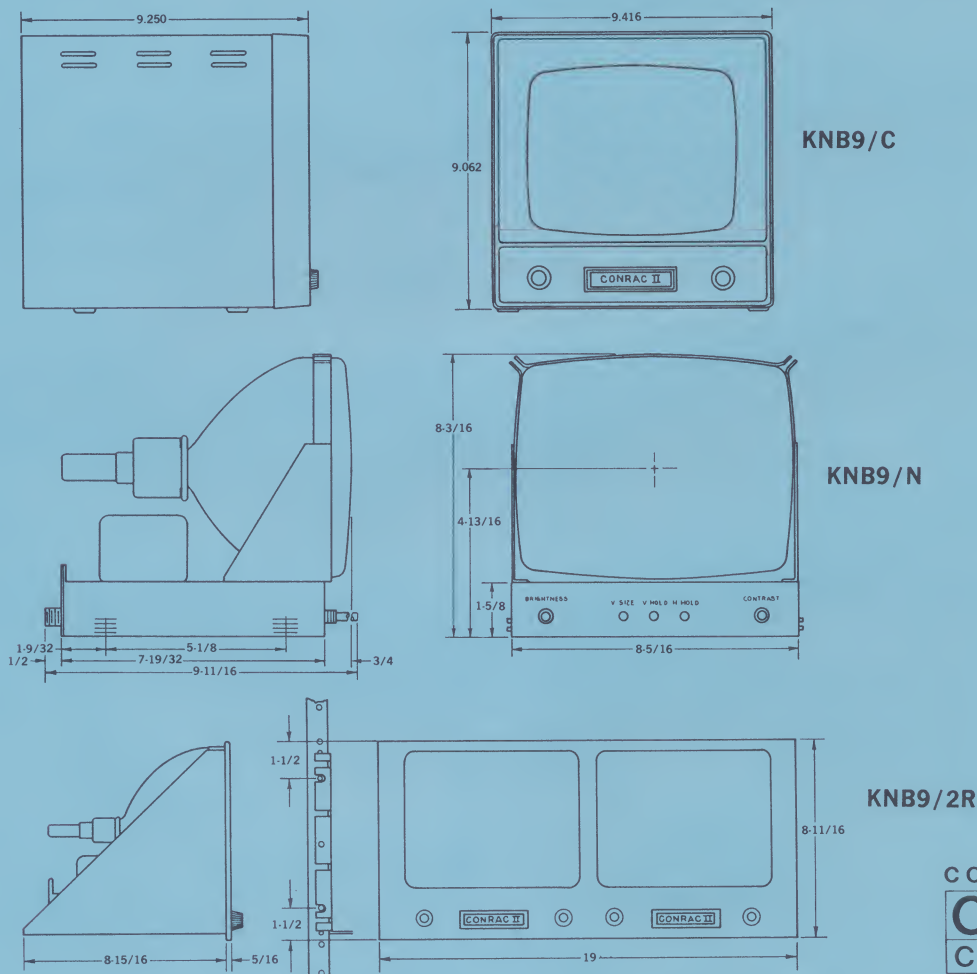
## CONSTRUCTION

Both the cabinet and chassis are fabricated of aluminum, while the front panel is a one-piece precision aluminum die casting. Bottom and rear covers are of medium gauge perforated steel. Racks are constructed of heavy gauge steel.

## OPTIONAL MOUNTING CONFIGURATIONS

- KNB9/RKL\* Monitor on right, blank left panel (To accommodate Tektronix 528 Scope)
- KNB9/RKR\* Monitor on left, blank right panel (To accommodate Tektronix 528 Scope)

\*Dimensions same as model KNB9/2R



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Conrac's CQF series high-resolution monitors are available as standard units for operation at 875, 945 and 1029 lines, 60 field operation. Other horizontal scanning frequencies between 15.750 kHz and 36.450 kHz (from 525 to 1215 lines, 60 fields per second) are available on special order.

High resolution kinescopes are standard in the 14, 17 and 21-inch sizes. The small spot size, coupled with dynamic focus circuits in the monitor, assure full resolution over the entire kinescope screen.

Video amplifier response is flat within  $\pm 1$  db to beyond 30 MHz. Differential gain is below 5% at 50 volts kinescope drive.

Nearly perfect interlace is assured through special circuitry when scaled-up EIA sync is used. Excellent interlace is also possible from a wide variety of simplified industrial synchronization signals derived from divider-chain type sync signals and from computer-generated signals. No equalizing pulses are required and a vertical sync pulse with a duration as short as two or three horizontal scanning lines is satisfactory.

Adjustable retrace blanking allows higher brightness levels without interference from retrace lines in the picture background. This is particularly valuable when the monitor is used to view X-ray images.

Freedom from picture bounce due to rapid AC line changes between 105 and 130 or 210 and 260 volts is guaranteed by the CQF voltage regulation circuits. Ulterior voltage is regulated at 19 kV nominal.

Sync options permit operation of the self-contained CQF monitor from (a) a line carrying composite video and sync, or (b) separate lines, one carrying video and one carrying composite sync. This unit is also available for operation from horizontal and vertical pulses, if so ordered.

A switch is provided to permit selection of either 100% or zero DC restoration.

# 14, 17, 21-INCH HIGH RESOLUTION MONITORS

## CQF Series



CQF17/C



CQF17/N

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# Specifications

## TECHNICAL DATA

**Input power:** 270 watts at 120/240 volts, 60 Hz (60 fields synchronous) or 50 Hz (50 fields synchronous). All performance specifications will be met while line voltage varies from 105 to 130 or 210 and 260 volts AC. Six-foot line cord furnished.

**Video signal:** 0.5 volts, p-p for 50 volts drive at kinescope. Sync negative at monitor input.

**Video input impedance:** High impedance bridging (equivalent to 470 K in parallel with 15 pF) can be terminated by an internal 75 ohm load through a switch located on the rear apron.

**Video response:** 30 MHz  $\pm 1$  db. Differential gain below 5% at 50 volts drive to kinescope.

**Linearity:** Within 2% of picture height.

## TUBES AND TRANSISTORS

The CQF monitors use 22 vacuum tubes as well as 24 diodes and transistors. Special high resolution kinescopes, manufactured by Conrac, are used: 14171P4 14" kinescope; 17127P4 17" kinescope; 21159P4 21" kinescope.

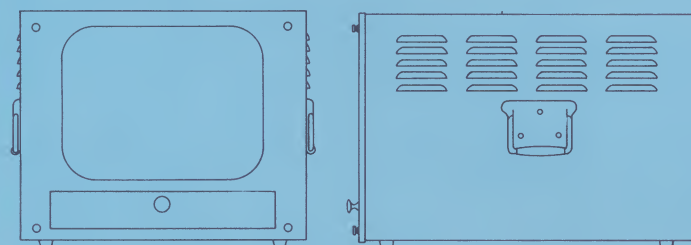
## CONTROLS, CONNECTORS, ADJUSTMENTS

### Front panel:

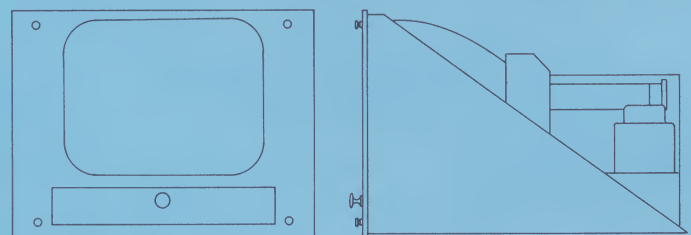
Off-on switch	Focus	Horizontal hold
Vertical hold	Height	Vertical linearity
Contrast	Brightness	Horizontal drive
Fuses		

### Rear apron:

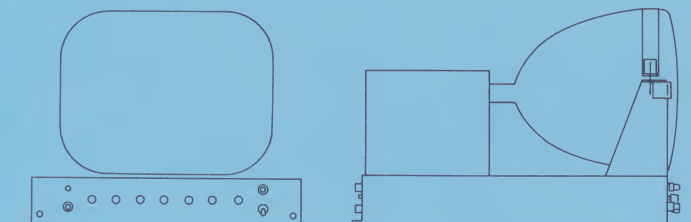
Sync selector switch	Video line termination switch
DC restorer switch	Horizontal linearity
Width	Ultor adjust
Horizontal and vertical blanking adjust	
B+ adjust	
AC outlet (wired through on-off switch, capacity 2 amps)	



CABINET



RACK MOUNT



CHASSIS

### Chassis deck:

Vertical feedback	Horizontal frequency
Horizontal dynamic focus	Interlace

**Connectors:** All video and sync connectors are S0239 type.

## CONSTRUCTION

Racks and cabinets are constructed of heavy gauge steel, finished in deep umber gray. Cabinets are complete with metal back and carrying handles. CQF 14" and 17" models are shipped with kinescope in place. CQF 21" models are shipped with kinescope separate. Cabinet and rack mount models have removable front panel for ease of cleaning the picture tube face and safety glass. Front controls are easily accessible from recessed panel with hinged cover. Circularly polarized laminated safety glass is available at extra cost. Clear bonded faceplate kinescopes, eliminating the need for safety glass in front of the tube, are available at extra cost.

## MECHANICAL

Model	Net Weight	Shipping Weight
Chassis CQF14/N	51 lbs. 23.1 kilos	71 lbs. 32.2 kilos
Rack Mount CQF14/R	68 lbs. 30.8 kilos	80 lbs. 36.3 kilos
Cabinet CQF14/C	87 lbs. 39.5 kilos	98 lbs. 44.5 kilos
Chassis CQF17/N	54 lbs. 24.5 kilos	76 lbs. 34.5 kilos
Rack Mount CQF17/R	75 lbs. 34.0 kilos	90 lbs. 40.8 kilos
Cabinet CQF17/C	88 lbs. 39.9 kilos	105 lbs. 47.6 kilos
Chassis CQF21/N	65 lbs. 29.5 kilos	84 lbs. 38.1 kilos
Rack Mount CQF21/R	101 lbs. 45.8 kilos	130 lbs. 59 kilos
Cabinet CQF21/C	124 lbs. 56.2 kilos	155 lbs. 70.2 kilos

### CABINET

Model	Width	Height	Depth
CQF14/C	17 3/4" D 45.09 cm	14-5/16" C 35.84 cm	20-9/16" E 52.23 cm
CQF17/C	17-11/16" D 44.93 cm	17 1/2" C 44.45 cm	20-9/16" E 52.23 cm
CQF21/C	24" D 60.96 cm	21-15/16" C 55.72 cm	24 3/4" E 62.86 cm

### RACK MOUNT

Model	Width	Height	Depth
CQF14/R	19" 48.26 cm	14" 35.56 cm	20 1/2" B 52.07 cm
CQF17/R	19" 48.26 cm	17 1/2" 44.45 cm	20 1/2" B 52.07 cm
CQF21/R	24" 60.96 cm	22 3/4" 57.78 cm	24 1/8" F 61.28 cm

### CHASSIS

Model	Width	Height	Depth
CQF14/N	16-5/8" 42.23 cm	13-3/8" 33.97 cm	19-13/16" A 50.32 cm
CQF17/N	16-5/8" 42.23 cm	16 1/2" 41.91 cm	19-13/16" A 50.32 cm
CQF21/N	20-7/8" 53.03 cm	20-1/16" 51 cm	23 1/2" 59.69 cm

- A Face of kine to rear lip chassis.  
 B Overall-mounting surface to rear is 20-3/16", panel 5/16".  
 C Dimension does not include feet.  
 D Dimension does not include handles.  
 E Dimension does not include knobs.  
 F Overall-mounting surface to rear is 23-13/16", panel 5/16".

CONRAC DIVISION  
**CONRAC**  
 CORPORATION

600 No. Rimsdale Ave., Covina, Calif. 91722 / (213) 966-3511

# AV12E TELEVISION RECEIVER



AV12E

Designed for off-air monitoring, video recording or rebroadcast applications, the AV12E is a professional quality television audio-video receiver.

It supplies composite video and separate audio from modulated RF signals and is designed to accept two types of interchangeable plug-in units.

CRYSTAL CONTROLLED OPERATION is possible by insertion of the type MCU single channel plug-in unit. The antenna input network contains a bandpass filter which can be adjusted to match any given set of antenna and signal strength conditions while providing a VSWR of better than 1.2 to one.

Employing a frame grid cascode RF amplifier, a crystal controlled local oscillator, a frequency multiplier chain, and pentode mixer, the MCU provides optimum performance on any given VHF channel.

MULTI-CHANNEL OPERATION is possible by insertion of the SU-213, 12-channel plug-in turret type tuner utilizing individual VHF channel strips.

VIDEO OUTPUT is held within  $\pm 1$  db to 4.1 MHz. Bifilar-T traps are employed to reduce phase distortion.

OVER 60 DB OF SOUND ATTENUATION in the video channel is possible through a combination "split-off sound" and "inter-carrier sound" circuitry. At the same time, the 4.5 MHz sound converter operates at an optimum ratio of sound carrier to picture carrier level. Both a fast time-constant limiter and a ratio detector are employed.

VIDEO OUTPUT of up to 1.5 volts p-p into a 75 ohm load with extremely low distortion is possible through utilization of a totem pole amplifier.

4.5 MEGAHERTZ SOUND REINSERTION is available at no extra charge if this operation is specified at the time the receiver is ordered. 75 ohm input is standard unless a 300 ohm input is specified.

Technical data, tube complement and mechanical specifications are given on the next page.

**CONRAC**<sup>®</sup>  
COVINA, CALIFORNIA



# Specifications

## Technical Data

**INPUT POWER:** 120 watts at 120/240 volts AC, 50/60 Hz. 6-foot cord.

**RF:** VHF 2-13, 75 ohms unbalanced. Can be supplied for 300 ohm balanced input if specified at time of ordering.

**VIDEO OUTPUT:** Sync negative. Nominally 1.4 volts p-p. Adjustable. Additional connector available for local monitoring. SO239 type connectors.

**AUDIO OUTPUT:** Zero dbm, 600 ohms balanced. Peerless output transformer, screw terminals. The unit is shipped with the multi-tap audio output transformer connected to feed standard 600 ohm balanced lines. Can be reconnected for other commonly used impedances.

## Controls, Connectors, Adjustments

**FRONT PANEL:** Video level, audio level, RF gain, AGC selector and power switch, (channel selector and fine tuning on SU-213), AGC delay, detector level.

**REAR APRON:** Antenna input, fuse, detector level, video output, audio output.

## Tube Complement

6BZ6	(3 each) IF Amplifiers	6BY6	Sync Separator	6CG8	Mixer
6CB6	IF Amplifier	6AL5	AGC Clamp and Bias Rectifier	6CG8	Crystal Oscillator and Frequency Multiplier
6AQ5	1st Video Amplifier	6AU6	AGC Keyer	6BN4	2nd Frequency Multiplier (Channels 7-13 only)
6DJ8	2nd Video Amplifier	6AQ5	Keying Pulse Amplifier	SU-213	
5687	3rd Video Amplifier	OA2	Voltage Regulator	6HA5	RF Amplifier
6AN8	1st Sound IF Amplifier	1N1764	(2 each) Low Voltage Rectifiers	6GJ7	Mixer
6AU6	2nd Sound IF Amplifier	1N60	Video Detector		
6AL5	Sound Detector	MCU CONVERTER			
6DJ8	Push-Pull Audio Output	ECC88	Cascode RF Amplifier		

## Mechanical Specifications

Furnished in rack hanger for mounting in standard 19" rack, 7" high, 12-1/16" deep, measured from the mounting face of the rack.

Available on slides at additional cost. Specify depth of rack.  
Net Weight: 28 lbs. Shipping Weight: 42 lbs.

## Construction

Finished in deep umber gray, baked enamel.



# CONRAC®

COVINA, CALIFORNIA

A DIVISION OF CONRAC CORPORATION

The Conrac CVA series are 17 or 23-inch industrial display monitors designed to give extremely stable, professional quality pictures from standard EIA signals, from industrial cameras producing other than EIA sync waveshapes, and from computer-generated signals. The 17-inch models are available in chassis, cabinet or rack-mount models; the 23-inch in cabinet, ceiling or pedestal mount models.

Freedom from picture bounce is guaranteed by both high and low voltage regulation. Size and brightness of the picture will not change as the AC line voltage varies between 105 and 130 volts or 210 and 260 volts.

A separate sync channel with an independent gain control assures positive interlace and stability regardless of setting of the contrast control. Video response is flat to 10 MHz, providing center resolution of 800 lines. Differential gain is below 5% with 50 volts driving the kinescope, for excellent gray scale characteristics.

Linearity, both horizontal and vertical, is kept within 2% of picture height, while corner resolution on the 90-degree tube is 600 lines. A differential input is provided to minimize hum and other direct pick-up on long video cables. The monitors may be changed conveniently between conventional grounded 75-ohm input and differential input operation by removing a single screw located on the rear apron adjacent to the input connectors.

Taps are provided on the horizontal output transformer so that the unit may be operated at reduced scan, completely showing all four corners. The monitors are connected for full scan operation at the factory, but the change can be made in minutes in the field.

Loop-through operation is provided by parallel receptacles in both the video and external sync circuit; a switch permits selection of either composite video or separate video and composite sync. The video input is provided with a terminating resistor and switch.

A switch is provided to permit selection of either 100% or zero DC restoration.

# 17 & 23-INCH REGULATED UTILITY MONITORS

## CVA17 & CVA23 Series



CVA17/C



CVA23/C



CVA23/Y

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**CONRAC**  
CORPORATION



# Specifications

## TECHNICAL DATA

**Input Power:** 190 watts at 120/240 volts, 60 Hz (525/60 U.S.) or 50 Hz (625/50 CCIR). All performance specifications will be met while the line voltage varies between 105 and 130 volts or 210 and 260 volts.

**Video Signal:** 0.25 volt p-p (minimum for 50 volts at kinescope). 4.0 volts p-p maximum. Sync negative at monitor input.

**Video Input Impedance:** High impedance bridging (equivalent to 470K in parallel with 15 pF) can be terminated by an internal 75 ohm load through a switch located on the rear apron.

**Video Response:** 10 MHz  $\pm$  1 dB (800 line resolution). Differential gain below 5% with 50 volt kinescope drive.

**DC Restoration:** 100% or zero, sync tip clamp.

**External Sync:** 1 to 8 volts. Parallel connectors. Monitor will operate from either composite video and sync signals or separate external composite sync.

**Linearity:** Within 2% of picture height.

**Kinescope:** 17BJP4, 90-degree deflection; 23BDP4, frosted finish with integral safety glass (23BTP4 unfrosted, optional).

## CONTROLS, CONNECTORS, ADJUSTMENTS

### Front Panel:

On-off switch	brightness	contrast
vertical hold	horizontal hold	vertical size
vertical linearity	AC line fuse	focus

### Rear Apron:

Paralleled video input connectors	video terminating switch
paralleled sync input connectors	sync level
horizontal linearity	horizontal drive
width	horizontal output fuse

### Chassis Deck:

DC restorer switch	Ultor voltage adjust
external-internal sync switch	B+ adjust

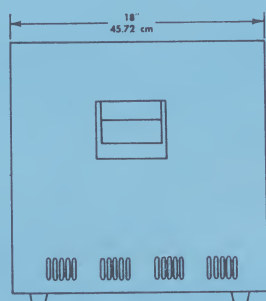
**Connectors:** All video and sync connectors are SO239 type.

## CONSTRUCTION

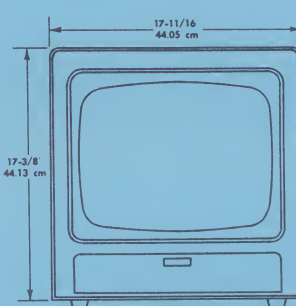
Racks and cabinets are constructed of heavy gauge steel, finished in deep umber gray. Cabinets are complete with metal backs and carrying handles or mounting studs. All CVA models are shipped with kinescope in place. Cabinet and rack mount models have removable front panel for ease in cleaning the picture tube face and safety glass. Front controls are easily accessible from recessed panel with hinged cover. Circularly polarized laminated safety glass is available at extra cost, as well as cemented faceplate kinescopes. The latter eliminates the need for safety glass in front of the tube.

## MECHANICAL

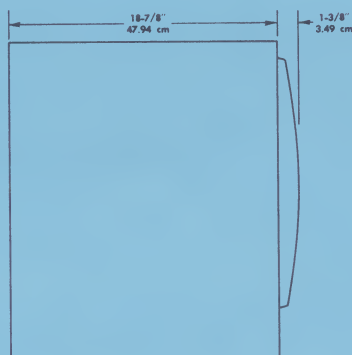
	Net Weight	Shipping Weight
CVA17/N Chassis	47 lbs. 21.3 kilos	60 lbs. 27.2 kilos
CVA17/R Rack Mounted	61 lbs. 27.7 kilos	78 lbs. 35.4 kilos
CVA17/C Cabinet	80 lbs. 36.3 kilos	91 lbs. 41.3 kilos
CVA23/C Cabinet	85 lbs. 38.6 kilos	121 lbs. 54.7 kilos
CVA23/Y Bail Mounted	85 lbs. 38.6 kilos	121 lbs. 54.7 kilos
ES23 Speaker Enclosure	15 lbs. 6.8 kilos	22 lbs. 10 kilos
M9 Ceiling Mount	10 lbs. 4.5 kilos	16 lbs. 7.3 kilos
M8 Pedestal Mount	18 lbs. 8.2 kilos	25 lbs. 11.3 kilos



CVA17/C



CVA23/C



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600 No. Rimsdale Ave., Covina, Calif. 91722 / (213) 966-3511

# ERL MULTIPLE MONITOR CONTROL RECEIVER



ERL12A



ERL82A/R

The ERL multiple monitor control receiver allows single location control of both picture and sound for any large grouping of local monitors. Selection of any RF channel available off-the-air or on a TV distribution system is as easy as operating a home television receiver. Designed to permit simplified addition of RF channels to a high resolution video closed circuit installation, the control receiver features a switch on the front panel which changes the signal fed to all monitors from "broadcast" to "CCTV".

Available for mounting in a cabinet, or for placing on a desk, the ERL control receiver offers the following features:

**VHF and UHF MODELS** — The ERL12A covers channels 2-13 with a switchable plug-in coil tuner while the ERL82A covers both UHF and VHF by making use of an internally added continuous UHF tuner. The VHF model is equipped with a 75 ohm coaxial input for use with TV distribution systems and is completely shielded to minimize direct pick-up. The UHF model features the same VHF coaxial input, but provides a balanced 300 ohm input for a UHF antenna.

A **BUILT-IN VIDEO DISTRIBUTION AMPLIFIER** is utilized as the ERL output to permit distribution of 10 MHz video signals. Two outputs and a looping video input controlled by a separate gain control allow use of the ERL with any high quality closed circuit video source. The ERL input is installed in a video line in exactly the same manner as any video monitor.

**LOCALLY ORIGINATED AUDIO** is also switched into the system to replace the off-air audio when the operation switch is on "closed circuit". This permits control of sound as well as control of pictures.

A **FOUR POSITION AUDIO RESPONSE** control is operative in both modes while 2.5 watts of undistorted audio is available for monitoring purposes. The control receiver also provides a low impedance output for driving an external audio power amplifier. This feature permits proper interconnection between the ERL and any custom engineered sound system.

The simplified block diagram on the reverse side will be of value to the systems designer since it shows the ERL inputs and outputs in relation to internal switching and amplifying functions.

## CONRAC®

COVINA, CALIFORNIA





The transistorized Conrac RKC and RLC 14-inch monitors have high reliability, low power drain (65 watts nominal), and generate a minimum of heat to affect other equipment. The RKC14 is a portable cabinet model; the RLC14, a rack-mount unit, uses only 10-1/2 inches of vertical rack space to display an optimum 14-inch picture.

The RKC and RLC models feature both high and low voltage regulation to assure stable pictures for broadcast, industrial and computer-generated-signal applications. Size or brightness will not change as line voltage varies from 105 to 130 or 210 to 260 volts AC.

A 70-degree tube is used to assure accurate picture geometry and excellent corner focus. Video response is flat to 10 MHz, assuring center resolution of 800 lines and a corner resolution of 700 lines. Size of the raster can be adjusted from the front of the monitor to show all four sides and corners completely.

Differential gain is below 5% at 75 volts drive to the kinescope, for excellent gray scale characteristics. Linearity, both horizontal and vertical, is within 2% of picture height. Loop-through operation is provided by parallel receptacles in both the video and external sync circuits; a switch permits selection of either composite video or separate video and composite sync. The video input is provided with a terminating resistor and switch.

A switch is provided to permit selection of either 100% or zero DC restoration. An additional switch allows selection of normal or fast AFC.

The transistorized RLC14 can mount in any console presently designed to accommodate a Conrac CLD14, since all dimensions are identical.

# TRANSISTORIZED 14-INCH TELEVISION MONITORS

Models RKC14 & RLC14



RKC 14



RLC14

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CONRAC DIVISION  
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CORPORATION



# Specifications

## TECHNICAL DATA

**Input Power:** 65 watts at 120/240 volts 60 Hz (525/60 U.S.) or 50 Hz (625/50 CCIR). All performance specifications will be met while line voltage varies from 105 to 130 or 210 to 260 volts AC. A three-wire line cord, 6 feet long, is provided.

**Video Signal:** 0.3 volt p-p (minimum for 50 volts at kinescope). Sync negative at monitor input.

**Video Input Impedance:** High impedance bridging (equivalent to 50K in parallel with 15 pF) can be terminated by an internal 75 ohm load ( $\pm 1\%$ ) through a switch located on rear apron.

**Video Response:** 10 MHz  $\pm 1$  dB. Differential gain below 5% with 75 volts kinescope drive.

**DC Restoration:** 100% or zero, sync tip clamp.

**External Sync:** 1 to 8 volts. Parallel connectors. Monitor will operate from either composite video and sync signals or separate external composite sync.

**Linearity:** Within 2% of picture height.

**Transistors:** The RKC and RLC monitors use 30 transistors and 26 diodes on glass epoxy circuit boards. The high voltage rectifier is a 1B3/1G3.

**Kinescope:** 14BDP4, 14-inch kinescope with clear laminated safety shield.

## CONTROLS, CONNECTORS, ADJUSTMENTS

### Front Panel:

On-Off switch	focus	horizontal hold
vertical hold	height	vertical linearity
contrast	brightness	width

### Rear Apron:

Paralleled video input connectors	horizontal AFC switch
video terminating switch	DC restorer switch
external-internal sync switch	paralleled sync input connectors
AC line fuse	AC outlet (wired through on-off switch—capacity 2 amps)

### Top Adjustments:

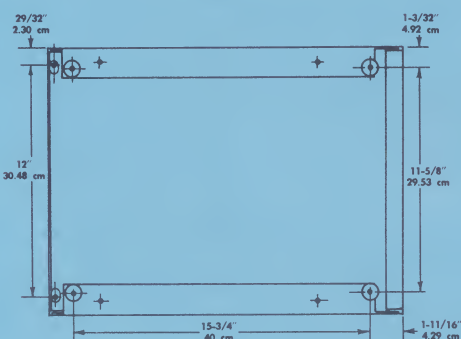
Horizontal linearity	high voltage regulation adjustment
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**Connectors:** All video and sync connectors are SO239 type.

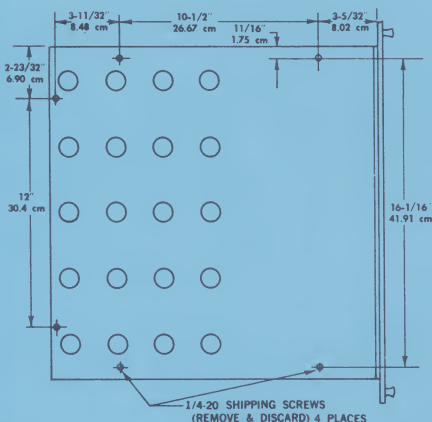
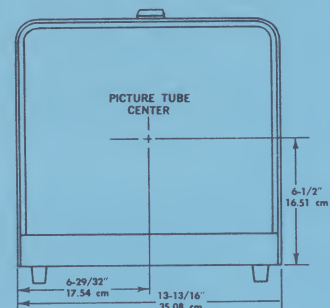
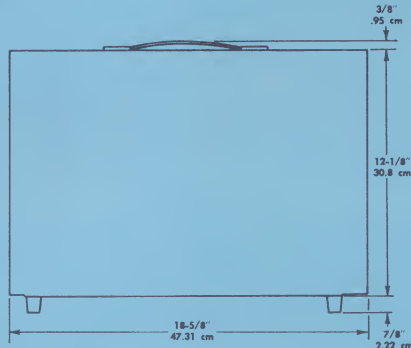
## CONSTRUCTION

Racks and cabinets are constructed of heavy gauge steel, finished in deep umber gray. All RKC and RLC units are shipped with kinescope in place. Front controls are easily accessible from recessed panel with hinged cover.

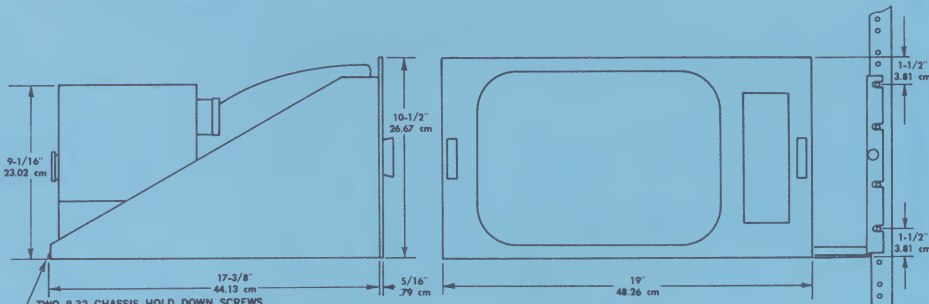
## MECHANICAL



RKC14



RLC14



CONRAC DIVISION  
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600 No. Rimsdale Ave., Covina, Calif. 91722 / (213) 966-3511

Conrac RND9 series 9-inch transistorized monitors have high reliability, low power drain, small size, and generate a minimum of heat which could affect other equipment. They are full broadcast quality video monitors designed for continuous duty operation from broadcast, industrial or computer-generated signals.

The RND9 series features a 9-inch Conrac-manufactured rectangular tube with excellent geometry and small spot size, assuring crisp 800 line center resolution and 700 line corner resolution.

The RND9 series includes chassis, portable cabinet, rack-mount and dual rack-mount models. The portable case is complete with carrying handle; the dual-mount models fit side by side in a standard 19-inch relay rack and require only 8¾ inches of vertical rack space; the single rack-mount models mount in standard 19-inch rack hangers and are available with a variety of front panels to allow installation of other equipment.

Video response on RND9 models is flat to 10 MHz, differential gain is below 5% at 75-volt drive to the kinescope. Size of the raster can be adjusted from the front of the monitors to show all four corners and sides completely, while linearity, both horizontal and vertical, is maintained within 2% of picture height.

Regulation of both high and low voltages provides extremely stable pictures which will not change size or brightness as the AC line voltage varies between 105 and 130 volts, or 210 and 260 volts.

Loop-through operation is provided by parallel receptacles in both the video and external sync circuits; a switch permits selection of either composite video or separate video and composite sync. The video input is provided with a terminating resistor and switch.

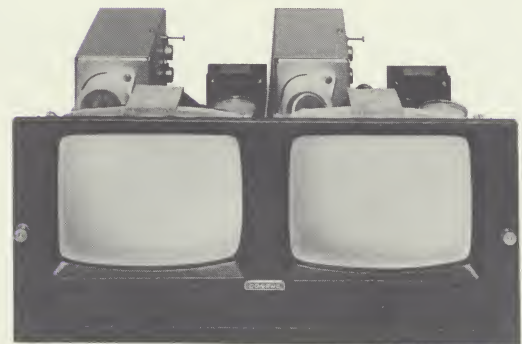
A switch is provided to permit selection of either 100% or zero DC restoration. An additional switch permits selection of normal or fast horizontal AFC.

# TRANSISTORIZED 9-INCH TELEVISION MONITORS

## RND9 Series



RND9/C



RND9/2R



RND9/CXU

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CONRAC DIVISION  
**CONRAC**  
CORPORATION



# Specifications

## TECHNICAL DATA

**Input Power:** 65 watts at 120/240 volts 60 Hz (525/60 U.S.) or 50 Hz (625/50 CCIR). All performance specifications will be met while the line voltage varies from 105 to 130 or 210 to 260 volts AC. A three-wire line cord, 6 feet long, is provided.

**Video Signal:** 0.3 volt p-p (minimum for 50 volts at kinescope). Sync negative at monitor input.

**Video Input Impedance:** High impedance bridging (equivalent to 50K in parallel with 15 pF) can be terminated by an internal 75 ohm load ( $\pm 1\%$ ) through a switch located on rear apron.

**Video Response:** 10 MHz  $\pm 1$  dB. Differential gain below 5% with 75 volts kinescope drive.

**DC Restoration:** 100% or zero, sync tip clamp.

**External Sync:** 1 to 8 volts. Parallel connectors. Monitor will operate from either composite video and sync signals or separate external composite sync.

**Linearity:** Within 2% of picture height.

**Transistors:** The RND9 monitors utilize 30 transistors and 26 diodes on glass epoxy circuit boards. The high voltage rectifier is a 1B3/1G3.

**Kinescope:** 9SP4, 9-inch kinescope with laminated safety shield.

## CONTROLS, CONNECTORS, ADJUSTMENTS

### Front Panel:

On-off switch	height	brightness
horizontal hold	vertical linearity	width
vertical hold	contrast	focus

### Rear Apron:

Sync selector switch	paralleled sync connectors
horizontal AFC switch	video line termination switch
paralleled video input connectors	AC line fuse

### Top Adjustments:

Vertical linearity	vertical hold range
DC restorer switch	high voltage regulator adjustment
horizontal linearity	

**Connectors:** All video and sync connectors are SO239 type.

## CONSTRUCTION

Racks and cabinets are constructed of heavy-gauge steel, finished in deep umber gray. Chassis are of heavy-gauge aluminum. Cabinets are complete with metal back and carrying handle. All RND9 models are shipped with kinescope in place. Front controls are easily accessible from recessed panel with hinged cover.

## OPTIONAL MOUNTING CONFIGURATIONS

RND9/RBL: monitor on right, blank left panel.

RND9/RBR: monitor on left, blank right panel.

RND9/RXR: monitor on left, Tektronix 529 scope cutout on right.

RND9/RXL: monitor on right, Tektronix 529 scope cutout on left.

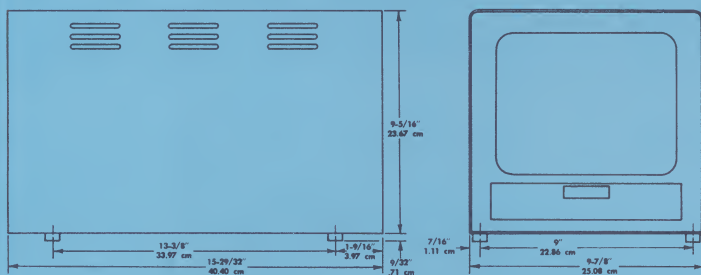
RND9/CXU: monitor on top, Tektronix cutout below.

RND9/RKR: monitor on left, Tektronix 528 scope cutout on right.

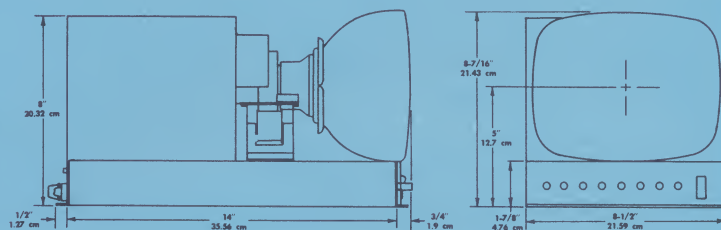
RND9/RKL: monitor on right, Tektronix 528 scope cutout on left.

## MECHANICAL

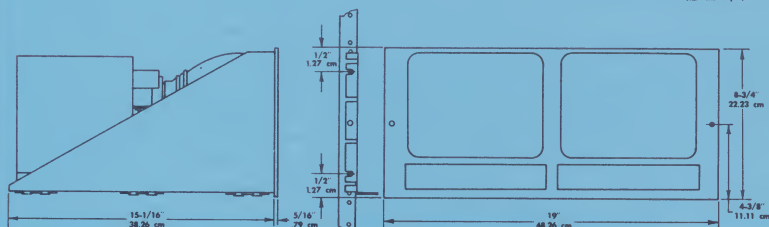
	Net Weight	Shipping Weight
RND9/N Chassis	18 lbs. 8.2 kilos	25 lbs. 11.4 kilos
RND9/C Portable Cabinet	31 lbs. 14.1 kilos	36 lbs. 16.3 kilos
RND9/R (BR, BL, XR, XL, KR, KL) Rack Mounted	31 lbs. 14.1 kilos	41 lbs. 18.6 kilos
RND9/2R Dual Rack Mounted	50 lbs. 22.7 kilos	60 lbs. 27.2 kilos



RND9/C



RND9/N



RND9/2R

CONRAC DIVISION  
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CORPORATION

600 No. Rimsdale Ave., Covina, Calif. 91722 / (213) 966-3511

Conrac's transistorized RVC series monitors offer high reliability, low power drain (70 watts nominal), and a minimum of heat. They are designed to give extremely stable pictures for industrial, broadcast, or computer-generated signals producing other than EIA sync waveshapes, and provide professional quality pictures in high ambient light areas.

Full regulation assures stable pictures under adverse conditions. Size or brightness will not change as the AC line voltage varies between 105 and 130 volts or 210 and 260 volts. The low voltage supply uses conventional series regulators, the high voltage supply employs a unique saturable reactor with feedback loop regulation. HV is nominally 19 KV with regulation within 400 volts.

Differential input is provided, to minimize hum and other extraneous pickup on long video cables. At 5 volts 60 Hz, hum suppression is 40 dB minimum; greater suppression is achieved at low hum levels. The monitors are conveniently changed between conventional grounded 75 ohm input and differential input operation by removing a single screw located on the rear apron adjacent to the input connectors.

A separate sync channel with an independent gain control assures positive interlace and stability regardless of contrast control setting.

Video response is flat to 10 MHz, assuring a center resolution of 800 lines and a corner resolution of 600 lines. Differential gain less than 5% at 50 volts kinescope drive provides excellent gray scale characteristics. Horizontal and vertical linearity is within 2% of picture height and respective size controls do not affect linearity adjustment.

Underscan coils are provided so the unit may be operated at reduced scan, showing all four corners. On large raster, size can be adjusted from the front of the monitor to show raster edges when desired.

A rectangular picture tube with bonded safety shield increases the viewing angle and permits convenient faceplate cleaning. The RVC23 uses an etched laminated safety shield, minimizing specular reflections; the RVC17 uses a standard clear laminated safety shield.

A locking trap door on the RVC23 prevents tampering with front operating controls at unattended locations.

Loop-through operation is provided by parallel receptacles in both video and external sync circuits. Video includes switch and terminating resistor. A switch is provided to permit selection of either 100% or zero DC restoration. An additional switch allows selection of normal or fast horizontal AFC.

# TRANSISTORIZED UTILITY AND DISPLAY MONITORS

Models RVC17, RVC23



RVC17/C



RVC23/C



RVC23/Y

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CONRAC DIVISION  
**CONRAC**  
CORPORATION



# Specifications

## TECHNICAL DATA

**Input Power:** 65 watts at 120/240 volts 60 Hz (525/60 U.S.) or 50 Hz (625/50 CCIR). All performance specifications will be met while the line voltage varies from 105 to 130 or 210 to 260 volts AC. A three-wire line cord, 6 feet long, is provided.

**Video Signal:** 0.3 volt p-p (minimum for 50 volts at kinescope). 5 volts p-p maximum. Sync negative at monitor input.

**Video Input Impedance:** High impedance bridging (equivalent to 50K in parallel with 15 pF) can be terminated by an internal 75 ohm load ( $\pm 1\%$ ) through a switch located on rear apron.

**Video Response:** 10 MHz  $\pm 1$  db. Differential gain below 5% with 75 volts kinescope drive.

**DC Restoration:** 100% or zero, sync tip clamp.

**External Sync:** 1 to 8 volts. Parallel connectors. Monitor will operate from either composite video and sync signals or separate external composite sync.

**Linearity:** Within 2% of picture height.

**Transistors:** RVC17 and RVC23 monitors use 33 transistors and 27 diodes on glass epoxy circuit boards. The high voltage rectifier is a 3A3.

**Kinescopes:** RVC17 - 17269P4, 17-inch kinescope with clear laminated safety shield. RVC23 - 23BDP4, 23-inch kinescope with etched laminated safety shield.

## STANDARD ACCESSORIES

ES23 speaker enclosure with 3" x 14" extended range speaker for RVC 23.

M6 pedestal mount supports RVC17/Y; with 2 1/2" standard pipe fitting.

M7 ceiling mount suspends RVC17/Y; for standard 1 1/2" pipe fitting.

M8 pedestal mount similar to M6, for RVC23/Y.

M9 ceiling mount similar to M7, for RVC23/Y.

M3 three-wheel dolly (less pipe) used with M6 or M8 mounts to make mobile pedestal.

## CONSTRUCTION

Racks and cabinets are constructed of heavy gauge steel. Cabinets are complete with metal back and carrying handles; mounting studs with RVC17/Y and RVC23/Y. Chassis is heavy gauge aluminum. All RVC series monitors are shipped with kinescope in place. Front controls are readily accessible on recessed panel with hinged cover.

## MECHANICAL

	Net Weight	Shipping Weight
RVC17/N Chassis	36 lbs. 16.3 kilos	52 lbs. 23.6 kilos
RVC17/R Rack Mounted	52 lbs. 23.6 kilos	67 lbs. 30.4 kilos
RVC17/C Cabinet	65 lbs. 29.5 kilos	79 lbs. 35.8 kilos
RVC17/Y Bail Mounted	66 lbs. 30 kilos	80 lbs. 36.3 kilos
RVC23/C Cabinet	99 lbs. 44.9 kilos	112 lbs. 50.8 kilos
RVC23/Y Bail Mounted	99 lbs. 44.9 kilos	112 lbs. 50.8 kilos

## CONTROLS, CONNECTORS, ADJUSTMENTS

### Front Panel:

On-off switch	brightness	contrast	width
vertical hold	horizontal hold	vertical size	
vertical linearity	AC line fuse	focus	

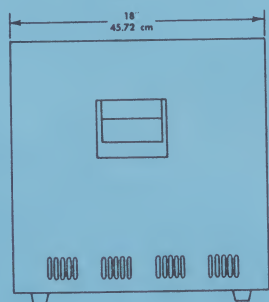
### Rear Apron:

Paralleled video input connectors	video terminating switch
paralleled sync input connectors	horizontal AFC switch
external-internal sync switch	

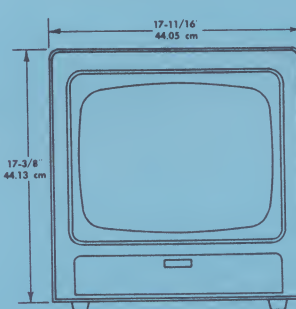
### Top Adjustments:

DC restorer switch	vertical hold range
horizontal linearity	high voltage regulator adjustment
vertical feedback	sync gain

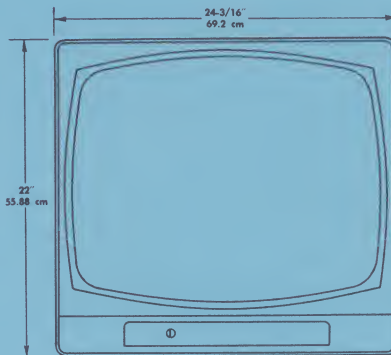
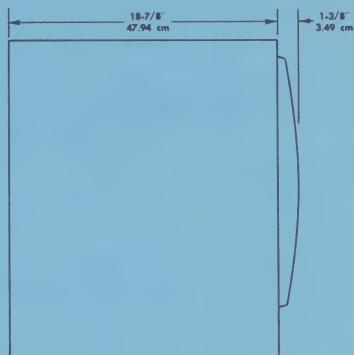
**Connectors:** All video and sync connectors are SO239 type.



RVC17/C



RVC23/C



CONRAC DIVISION  
**CONRAC**  
CORPORATION

600 No. Rimsdale Ave., Covina, Calif. 91722 / (213) 966-3511

# CONRAC PRICE LIST

## INDUSTRIAL TELEVISION EQUIPMENT

MODEL	DESCRIPTION	NET PRICE
<b>OFF-AIR RECEIVERS</b>		
AV12E	Basic Audio-Video Receiver (less plug-in unit) .....	\$ 340.00
	Plug-In Units for AV12E: SU-213 12-Channel Station Selector .....	60.00
	MCU Single Channel Unit (VHF only) .....	135.00
ERL12A	VHF Only Tuner .....	265.00
ERL82A	UHF Version .....	295.00
ERL82A/R	For Rack Mount .....	295.00

### CONRAC II TRANSISTORIZED ECONOMY-LINE MONITORS

KNB9/C	9" Unit in Metal Cabinet .....	225.00
KNB9/2R	Twin 9" Units in Mounting for 19" Rack .....	405.00
KNB9/N	9" Unit, Chassis only .....	185.00
KNB9/RBL	9" Unit in 19" Rack Mounting with Left of Front Panel Blank .....	220.00
KNB9/RBR	9" Unit in 19" Rack Mounting with Right of Front Panel Blank .....	220.00
KNB9/RKL	9" Unit in 19" Rack Mounting to Accommodate Tektronix 528 Scope Left .....	220.00
KNB9/RKR	9" Unit in 19" Rack Mounting to Accommodate Tektronix 528 Scope Right .....	220.00

MODEL	DESCRIPTION	NET PRICE
<b>GENERAL PURPOSE MONITORS</b> Tube Type		
CNB8/C	8" Unit in Metal Cabinet .....	325.00
CNB8/2R	Twin 8" Units in Mounting for 19" Rack .....	595.00
CNB8/N	8" Unit, Chassis only .....	275.00
CNB8/RBL	8" Unit in 19" Rack Mounting with Left of Front Panel Blank .....	320.00
CNB8/RBR	8" Unit in 19" Rack Mounting with Right of Front Panel Blank .....	320.00
CNB8/RXL	8" Unit in 19" Rack Mounting to Accommodate Tektronix 529 Scope Left .....	320.00
CNB8/RXR	8" Unit in 19" Rack Mounting to Accommodate Tektronix 529 Scope Right .....	320.00
CNB8/RKL	8" Unit in 19" Rack Mounting to Accommodate Tektronix 528 Scope Left .....	320.00
CNB8/RKR	8" Unit in 19" Rack Mounting to Accommodate Tektronix 528 Scope Right .....	320.00
CNB8/RC	Single 8" Unit Centered in Mounting for 19" Rack .....	340.00
CKD14	14" Unit in Metal Cabinet .....	365.00
CLD14	14" Unit in Mounting for 19" Rack ..	355.00

MODEL	DESCRIPTION	NET PRICE
<b>GENERAL PURPOSE MONITORS</b> Tube Type		
CVA17/C	17" Unit in Metal Cabinet .....	\$ 365.00
CVA17/R	17" Unit in Mounting for 19" Rack ..	355.00
CVA17/N	17" Unit, Chassis only .....	285.00
CVA17/Y	17" Unit in Metal Cabinet with Mounting Studs .....	365.00
WVA21/C	21" Unit in Metal Cabinet .....	405.00
WVA21/R	21" Unit in Mounting for 24" Rack ..	385.00
WVA21/N	21" Unit, Chassis only .....	305.00
CVA23/C	23" Fully Regulated Unit in Metal Cabinet .....	415.00
CVA23/Y	23" Fully Regulated Unit in Metal Cabinet with Mounting Studs ....	415.00
CEA25/C	25" Fully Regulated Unit in Metal Cabinet .....	450.00
CEA25/Y	25" Fully Regulated Unit in Metal Cabinet with Mounting Studs ...	450.00

### TRANSISTORIZED GENERAL PURPOSE MONITORS

RND9/C	9" Unit in Metal Cabinet .....	455.00
RND9/2R	Twin 9" Units in Mounting for 19" Rack .....	865.00
RND9/N	9" Unit, Chassis only .....	415.00
RND9/RBL	9" Unit in 19" Rack Mounting with Left of Front Panel Blank .....	450.00
RND9/RBR	9" Unit in 19" Rack Mounting with Right of Front Panel Blank .....	450.00
RND9/CXU	9" Unit in Portable Metal Cabinet to Accommodate Tektronix 529 Scope Below .....	495.00
RND9/RXL	9" Unit in 19" Rack Mounting to Accommodate Tektronix 529 Scope Left .....	450.00
RND9/RXR	9" Unit in 19" Rack Mounting to Accommodate Tektronix 529 Scope Right .....	450.00
RND9/RKL	9" Unit in 19" Rack Mounting to Accommodate Tektronix 528 Scope Left .....	450.00
RND9/RKR	9" Unit in 19" Rack Mounting to Accommodate Tektronix 528 Scope Right .....	450.00
RKC14	14" Unit in Metal Cabinet .....	480.00
RLC14	14" Unit in Mounting for 19" Rack ..	470.00
RVC17/C	17" Unit in Metal Cabinet .....	495.00
RVC17/R	17" Unit in Mounting for 19" Rack ..	485.00
RVC17/N	17" Unit, Chassis only .....	415.00
RVC17/Y	17" Unit in Metal Cabinet with Mounting Studs .....	495.00
RVC23/C	23" Fully Regulated Unit in Metal Cabinet .....	525.00
RVC23/Y	23" Fully Regulated Unit in Metal Cabinet with Mounting Studs	525.00

*Continued*

All prices include picture tube and are subject to change without notice. Terms are 30 days net. Shipments are F.O.B. Covina, California. Effective: July 1, 1968.

# CONRAC

COVINA, CALIFORNIA 91722



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*Continued*

MODEL	DESCRIPTION	NET PRICE
<b>HIGH RESOLUTION MONITORS</b>		
Can be furnished on order at 875/945/1029 lines. Other frequencies between 525 and 1225 available on quotation only.		
CQF14/C	14" Unit in Metal Cabinet . . . . .	\$ 580.00
CQF14/R	14" Unit in Mounting for 19" Rack . .	570.00
CQF14/N	14" Unit, Chassis only . . . . .	500.00
CQF17/C	17" Unit in Metal Cabinet . . . . .	585.00
CQF17/R	17" Unit in Mounting for 19" Rack . .	575.00
CQF17/N	17" Unit, Chassis only . . . . .	505.00
CQF17/Y	17" Unit in Metal Cabinet with Mounting Studs . . . . .	585.00
CQF21/C	21" Unit in Metal Cabinet . . . . .	625.00
CQF21/R	21" Unit in Mounting for 24" Rack . .	605.00
CQF21/N	21" Unit, Chassis only . . . . .	525.00

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**ACCESSORIES**

ES23	Enclosure and Speaker for CVA23, RVB23 . . . . .	40.00
ES25	Enclosure and Speaker for a CEA25	40.00
M3	Three-Wheel Dolly (less pipe) used with M6 and M8 Mount to make Mobile Pedestal . . . . .	60.00
M6	Pedestal Mount for 17" CVA17/Y, CQF17/Y, RVB17/Y . . . . .	40.00
M7	Ceiling Mount for 17" CVA17/Y, CQF17/Y, RVB17/Y . . . . .	30.00
M8	Pedestal Mount for CVA23/Y, RVB23/Y, CEA25/Y . . . . .	40.00
M9	Ceiling Mount for CVA23/Y, RVB23/Y, CEA25/Y . . . . .	30.00
6013	Table Mounting Kit — Contains panels and all parts necessary to make ERL12 and ERL82 into table model . . . . .	15.00

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# CONRAC CORPORATION

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**330 Madison Avenue, New York, New York 10017**